



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Charles Tateosian

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (7 U.S.C. 2321 ET SEQ.)

SQUASH

'Bunutkin'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 15th day of April in the year of our Lord one thousand nine hundred and eighty-two.

Attest:

Kenneth H. Evans
Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 350

LECTURE NOTES

BY

These notes are intended to provide a comprehensive overview of the topics covered in the course. The course is designed to provide a solid foundation in the principles of physics, with a focus on the application of these principles to real-world problems. The topics covered include mechanics, electromagnetism, and quantum mechanics. The course is taught by a team of experienced faculty members, and the notes are written by one of the lecturers. The notes are intended to be used as a supplement to the lectures, and to provide a clear and concise summary of the material covered in each lecture. The notes are organized into chapters, and each chapter covers a specific topic. The chapters are: 1. Mechanics, 2. Electromagnetism, and 3. Quantum Mechanics. Each chapter contains a series of lectures, and the notes are written in a clear and concise style. The notes are intended to be used as a reference, and to provide a clear and concise summary of the material covered in each lecture. The notes are organized into chapters, and each chapter covers a specific topic. The chapters are: 1. Mechanics, 2. Electromagnetism, and 3. Quantum Mechanics. Each chapter contains a series of lectures, and the notes are written in a clear and concise style. The notes are intended to be used as a reference, and to provide a clear and concise summary of the material covered in each lecture.



United States
Department of
Agriculture

Agricultural
Marketing
Service

Livestock, Meat,
Grain, and
Seed Division

National Agricultural
Library Building
Beltsville, MD. 20705

6/82

MAY 27 1982

TO : National Seed Storage Laboratory
Fort Collins, CO 80521

SUBJECT

PV# 8100039 SQUASH 'BUNUTKIN' - Charles Tateosian

Attached is the above-identified sample and an Objective Description of Variety form in accordance with our Memorandum of Understanding and as agreed upon during Mr. Leese's visit with Dr. Louis Bass on June 12, 1972.

One copy of this duplicate form showing the result of your germination test on 100 seeds of pure seed of this sample should be returned to this Office. Return of the duplicate form will serve as acknowledgement of receipt of the sample.

GERMINATION:

99 %

DATE:

7/82

Sincerely,

OK - rfs 10/5/82

Kenneth H. Evans

Kenneth H. Evans
Acting Commissioner
Plant Variety Protection Office

Attachment: Seed Sample

In duplicate.

CMO-164

166238



The Agricultural Marketing Service
is an agency of the
United States Department of Agriculture

FALL SQUASH

8100039

"Bunutkin"

13A. Exhibit A.

In 1972, one sport fruit was noted in a planting of Butternut squash. Seed was saved, planted and field selections made each succeeding year. No off type fruits have been found since the 1977 crop. All fruits in 1978, 1979, 1980 and 1981 are similar.

Plant growth is uniform. No dwarf, giant, bush type growth or non-fruit bearing plants have been found. Germination, seedling vigor and vining traits appear quite uniform. While taking plant data, no off-type plants were noted in the 1/2 acre block. No plant variation can be recalled.

Cucurbita varieties growing in the area where the sport was found included Thomas Halloween, Connecticut Field, Sugar Pie Pumpkin and Butternut. The species for "Bunutkin" has been identified as moschata by Dr. Ashby M. Rhodes, University of Illinois, Plant Breeder.

RECEIVED

SEP 22 1981



AMS, LPG&S DIV.
PVPO

13B. Exhibit B. Novelty Statement

A concise summary statement to express the novelty of "Bunutkin" is to say it is the shape of Sugar Pie Pumpkin with the rind color and flesh texture of Butternut.

"Bunutkin" does slightly taper toward the stem and more so than does Sugar Pie Pumpkin. "Bunutkin" does maintain the square blocky shoulder with a slightly depressed stem scar like butternut which is unlike Sugar Pie. The stem attachment is typical of the moschata species which is unlike Sugar Pie Pumpkin, which is the pepo species. Internally "Bunutkin" has thicker flesh than does Sugar Pie and the seed cavity is in the bottom 2/3rds of the fruit. Sugar Pie has a rather round seed cavity, whereas "Bunutkin" has an oblong seed cavity being much wider than high, when resting on the blossom scar.

"Bunutkin" has the rind color of Butternut but, again, resembles the shape of Sugar Pie. Butternut has a seed cavity in a bulbing base, whereas "Bunutkin" has a similar shaped oblong, wider than high, seed cavity contained within the globular fruit. Seed cavity location of "Bunutkin" and Butternut are similar; however, above the seed cavity in Butternut is a cylindrical body or neck of flesh, whereas in "Bunutkin" the meat has more breadth than height, measuring down from the stem scar. The flesh color of "Bunutkin" more nearly resembles that of Sugar Pie Pumpkin than Butternut squash. The flesh texture is more like Butternut than Sugar Pie. "Bunutkin" has the same culinary purposes as Butternut but the fruit size and shape of Sugar Pie Pumpkin.

*'BUNUTKIN' IS MOST SIMILAR TO 'SUGAR PIE' (SMALL SWEET) PUMPKIN
AND 'BUTTERNUT' SQUASH — ACCORDING TO APPLICANT'S LETTER OF NOV. 16, 1981.
RJS 11/18/81*

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SEP 20 1981



U. S. DEPARTMENT

OF AGRICULTURE

AMS, LPG&S DIV.
PVPO

13B. Exhibit B. Novelty Statement

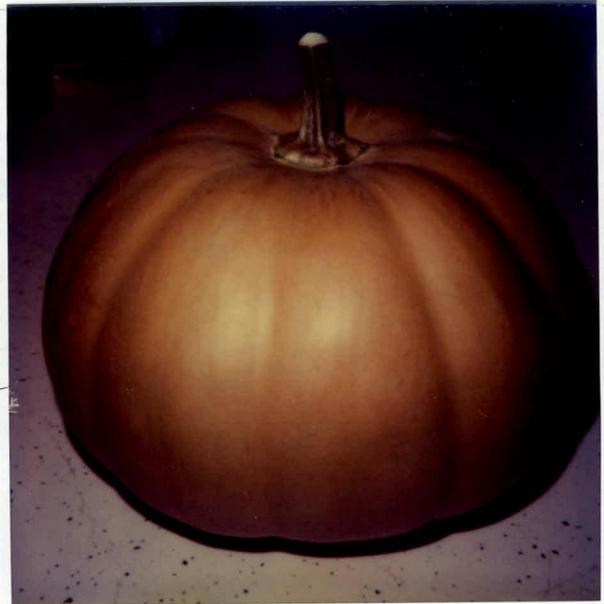
"Bunutkin" can best be described as the shape of Sugar Pie Pumpkin and the color of Butternut Squash. Color photographs are enclosed for a visual description.



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JAN 15 1981
U. S. DEPARTMENT OF AGRICULTURE
AMS. GRAIN DIV.
PVPO

13B. Exhibit B. Novelty Statement

"Bunutkin" can best be described as the shape of Sugar Pie Pumpkin and the color of Butternut Squash. Color photographs are enclosed for a visual description.



RECEIVED

SEP 23 1981



AMS, LPG&S DIV.
PVPO

13D. Exhibit D. Additional Description of the Variety

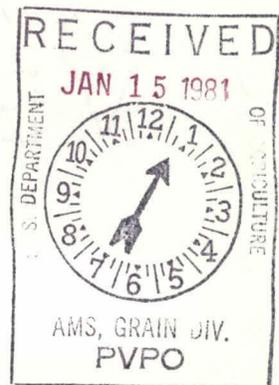
"Bunutkin" has been taste tested by a panel and was rated one of the two best of six candidates tested. Waltham Butternut was one of the candidates and some breeding lines at the Suburban Experiment Station in Waltham, Mass. were the others. Cooked and served with a meal "Bunutkin" rated very satisfactory by eight diners. The flesh is very moist, sweet and deep orange in color. Cooking appears to intensify the orange flesh color.

"Bunutkin" appears to tolerate shade while growing. Yield per plant is considered good but yields per acre has not been tested to date.

Fruits turn darker buff color as storage time increases. Stored under the same conditions with Waltham Butternut, "Bunutkin" stored equally well, if not better.

Squash peelers could well be interested in "Bunutkin" because of its size, shape for easy peeling and uniform thickness of flesh.

UNITED STATES GOVERNMENT
BOND



8b. FLOWER - Staminate:

3 0 Sepals: MM LENGTH

0 4 Sepals: MM WIDTH

1 6 Pedicel: CM LENGTH

4 Color: 1 = WHITE 2 = LEMON YELLOW 3 = MID-YELLOW 4 = DEEP YELLOW 5 = ORANGE

Similar to Butternut

9. FRUIT (Market Maturity)

1 8 CM LENGTH

2 5 CM WIDTH (Stem end)

2 5 CM WIDTH (Blossom end)

2 6 2 4 GM AVERAGE WEIGHT

10 Shape according to variety type: 1 = ACORN 2 = BANANA 3 = BUTTERCUP 4 = BUTTERNUT 5 = CONNECTICUT FIELD 6 = CROOKNECK 7 = HUBBARD 8 = SCALLOP 9 = STRAIGHTNECK 10 = OTHER (Specify) Sugar Pie Pumpkin

1 Apex: 1 = DEPRESSED 2 = FLATTENED

2 Base: 3 = ROUNDED 4 = TAPER POINTED

2 Ribs: 1 = NONE 2 = INCONSPICUOUS 3 = PROMINANT

1 Rib Furrows: 1 = SHALLOW 2 = MEDIUM DEEP 2 Rib Furrows: 1 = NARROW 2 = MEDIUM WIDE 3 = WIDE

1 Fruit Surface: 1 = SMOOTH 2 = FINE WRINKLE 3 = SHALLOWLY WAVY

1 Warts: 1 = NONE 2 = FEW 3 = MANY

0 1 Blossom Scar Button: 1 = DEPRESSED 2 = SLIGHTLY EXTENDED 3 = RAISED ACORN

10. RIND

0 1 MM THICKNESS AT MEDIAL 2 1 = SOFT 2 = HARD 3 = WOODY & TOUGH

1 COLOR PATTERN: 1 = REGULAR 2 = IRREGULAR

COLORS: (Select two when necessary, i.e. Grayish- Buff) 1 2 0 4

01 = WHITE 02 = CREAM 03 = YELLOW 04 = BUFF 05 = BROWN 06 = BRONZE 07 = GREEN 08 = ORANGE 08 = PINK 10 = RED 11 = BLUE 12 = GRAY 13 = BLACK 14 = OTHER (Specify)

0 4 0 0 SELF OR GROUND

PATTERN:

LOCATION OF PATTERN COLORS:

Grid for pattern and location selection with options: STREAKS, STRIPES, SPOTS, BLOTCHES, LACE, OTHER (Specify); 1 = NOT SPECIFIC, 2 = STEM END HALF, 3 = BLOSSOM END HALF, 4 = ACORN OR TORBAN, 5 = OTHER (Specify)

11. FLESH

8 0 Thickness: MM BLOSSOM END

8 0 Thickness: MM MEDIAL

8 0 Thickness: MM STEM END

OBJECTIVE DESCRIPTION OF VARIETY
 PUMPKIN/SQUASH/GOURD (CUCURBITA SPP.)

| | |
|---|--|
| NAME OF APPLICANT(S) Charles Tateosian | VARIETY NAME OR TEMPORARY DESIGNINATION BUNUTKIN |
| ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 1 Blanchard St., Andover, MA 01810 | FOR OFFICIAL USE ONLY PVPO NUMBER 8100039 |

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. SPECIES:

1 = LAGENARIA 2 = MAXIMA 3 = MIXTA 4 = MOSCHATA 5 = PEPO 6 = OTHER (Specify) _____

2. KIND (According to use):

1 = PUMPKIN 2 = SQUASH 3 = GOURD

3. TYPE:

1 = SUMMER (Vegetable Marrow) 2 = WINTER (Boston Marrow)

4. COTYLEDON:

MM. LONG MM. WIDE Seeded 9/2 data taken 9/15/81
appear smaller than spring seeded

Apex: 1 = TAPERED 2 = ROUNDED 3 = NOTCHED Veining: 1 = OBSCURE 2 = PLAINLY VISIBLE
3 = PROMINENT

1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN

5. PLANT:

1 = BUSH 2 = SEMI-BUSH 3 = LONG VINES 1 = PILOSE 2 = PRICKLY 3 = GLABROUS

6. MAIN STEM:

1 = ROUND 2 = ANGLED MM. DIAMETER AT MID-POINT OF FIRST INTERNODE CM. AVERAGE LENGTH

AVERAGE NUMBER OF INTERNODES data taken 7/7/81
Similar to Butternut

7. LEAVES:

Shape: 1 = OVATE 2 = ORBICULAR 3 = RENIFORM 4 = RETUSE Shape: 1 = NOT LOBED 2 = SHALLOW LOBED
3 = DEEP LOBED

Margin: 1 = ENTIRE 2 = DENTICULATE 3 = DENTATE Margin: 1 = FLAT 2 = FRILLED

CM. WIDE CM. LONG Surface: 1 = SMOOTH 2 = BLISTERED

Dorsal Surface: } *At 3rd Internode - 25 Plant Average*
1 = GLABROUS 2 = SOFT HAIRY 3 = BRISTLED

Ventral Surface: }

1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN 1 = NOT BLOTCHED 2 = BLOTCHED WITH GRAY

CM. PETIOLE LENGTH Similar to Butternut

8a. FLOWER - Pistillate:

CM. DIAMETER Ovary: 1 = DRUM-LIKE 2 = TURBINATE 3 = FUSIFORM 4 = PEDICEL: CM. LENGTH

Margin: 1 = STRAIGHT 2 = CURVED Margin: 1 = PLAIN 2 = FRILLED Sepals: MM. WIDTH Sepals: MM. LENGTH

Color: 1 = WHITE 2 = LEMON YELLOW 3 = MID-YELLOW 4 = DEEP YELLOW 5 = ORANGE

Similar to Butternut

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

INSTRUCTIONS: See Reverse.

| | | | | | |
|---|--|---|---|--|---|
| 1a. TEMPORARY DESIGNATION OF VARIETY Bunutkin | | 1b. VARIETY NAME Bunutkin | | FOR OFFICIAL USE ONLY | |
| | | | | PV NUMBER 8100039 | |
| 2. KIND NAME Fall Squash | | 3. GENUS AND SPECIES NAME Cucurbita moschata | | FILING DATE 1/15/81 | TIME 1:00 A.M. P.M. |
| 4. FAMILY NAME (BOTANICAL) Cucurbitaceae Gourd family | | 5. DATE OF DETERMINATION October 1979 | | FEE RECEIVED \$ 500.00 | DATE 1/15/81 |
| | | | | \$ 250.00 | 12/23/81 |
| 6. NAME OF APPLICANT(S) Charles Tateosian | | 7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 1 Blanchard St., Andover, MA 01810 | | 8. TELEPHONE AREA CODE AND NUMBER 617-475-4729 | |
| 9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) | | | 10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION | | 11. DATE OF INCORPORATION |
| 12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: | | | | | |

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)

13B. Exhibit B, Novelty Statement.

13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)

13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) YES NO

| | | | |
|---|--|--|--|
| 14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED | | |
|---|--|--|--|

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? YES NO (If "Yes," give name of countries and dates.)

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? YES NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

1/12/81
 (DATE)

Charles Tateosian
 (SIGNATURE OF APPLICANT)